Lessons from the 2024 Hurricane Helene IV Fluid Shortage

Sophia Gorgens, MD
EMS and Disaster Medicine Specialist
Department of Emergency Medicine
Yale University

Disclosures

I have no financial disclosures

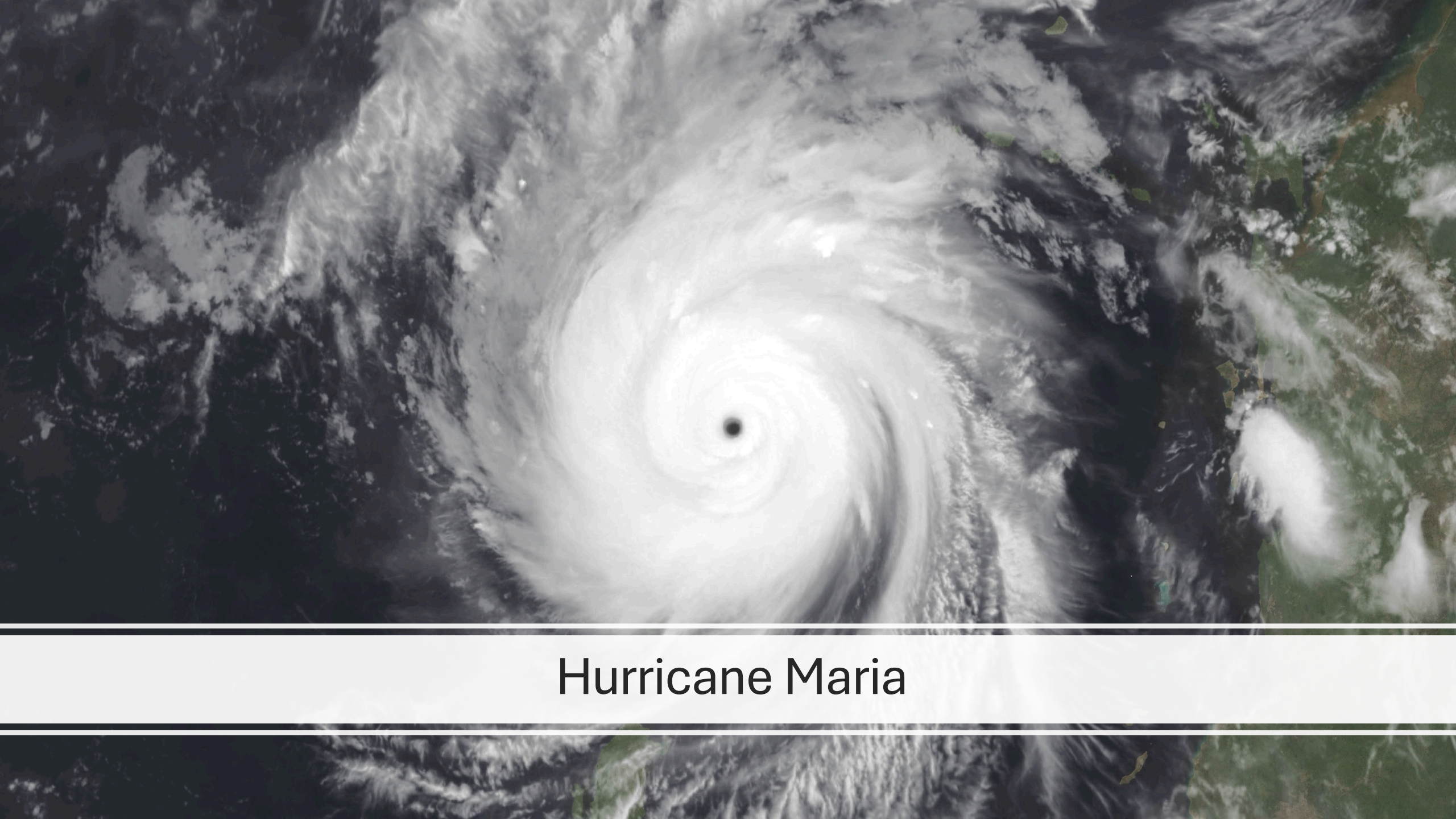
How the IV Fluids Supply Chain Normally Functions

What Disrupts the System — and How Predictable Is It?

Natural disasters, facility outages, geopolitical fragility, cyber attacks

Pre-existing Shortages

Demand Surges



Hurricane Maria

Hurricane Helene

The 2024 IV Fluids Shortage

RESEARCH ARTICLE

The impact on healthcare facilities of the 2024 IV fluids shortage after Hurricane Helene: A mixed methods study

Sophia Gorgens[1,2*], Ahmad Alshadad[2], Almas Malek[2], Amit Boukai[2], Lindsay Davis[2], Attila J. Hertelendy[2,3], Fadi Issa[2], Christina Woodward[2], Amalia Voskanyan[2], Gregory Ciottone[2]

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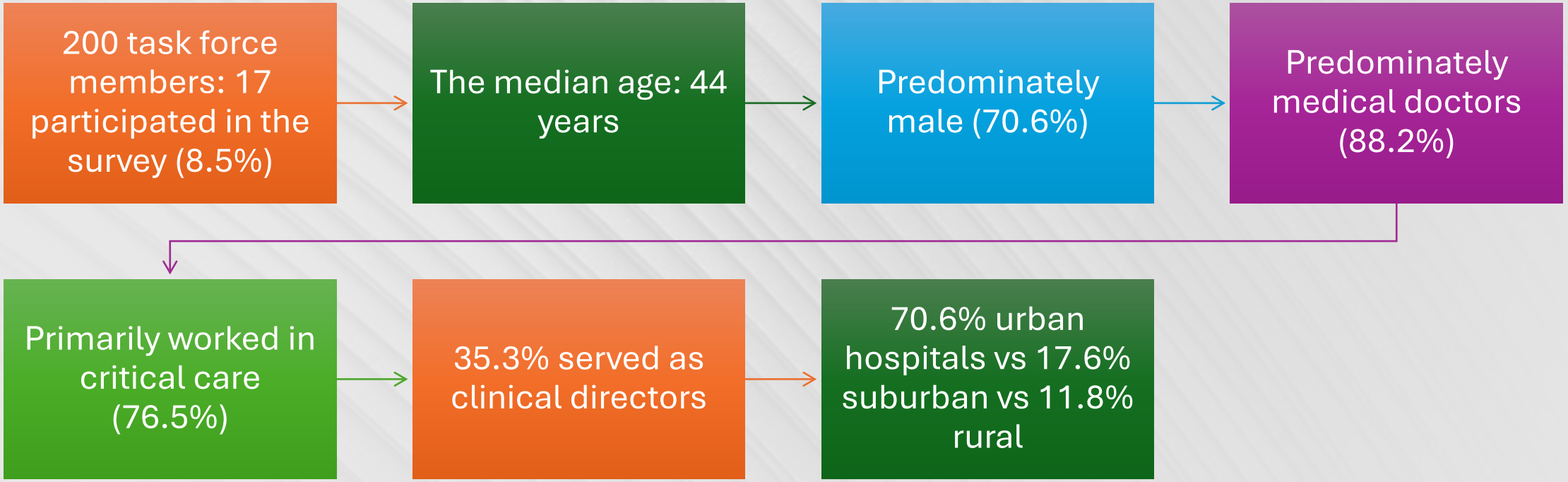
Methodology

- Quantitative survey
- Qualitative semi-structured interviews

Results: Who Participated



Results: Quantitative

- Most hospitals (88.2%) were affected by the IV fluids shortage
- No hospitals ran out completely
- 11.8% hospitals asked for IV fluids from neighboring hospitals
- 17.6% gave IV fluids to neighboring hospitals
- 64.7% of hospitals limited which patients receives IV fluids
- With conservation, hospitals decreased IV fluids use by 40%
- Majority (41.2%) of hospitals were affected between 2 and 3 months**, 23.5% still had ongoing issues over 6 months later**

Results: Qualitative

Six Themes

Preparedness

Theme 1

Impact of the Shortage

Theme 2

Response and Solutions

Theme 3

Ethics & Resource Allocation

Theme 4

Collaboration

Theme 5

Governance

Theme 6

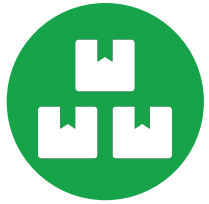
Preparedness

Qualitative Findings

> *I think we've gotten better at adapting protocols. And adapting practices to account for the possibility of shortages.*

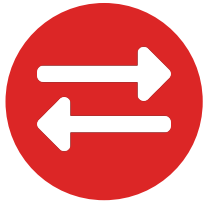
Increased Experience

Greater familiarity with a variety of shortages and improved protocol adaptability across settings.



Supply Tracking Systems

More effective systems for monitoring utilization and tracking remaining reserve of critical supplies.



Supply-and-Demand Challenges

Difficulties arising from a supply-and-demand economy resulting in just-in-time purchasing practices.

Impact of the Shortage

Qualitative Findings

Theme 2 of 6

Patient Care & Safety

Potential threats to patient care and safety arising from supply constraints and altered clinical decision-making.

Reduced Waste

Decreased medical waste of IV fluids and more judicious, intentional use of fluid resources.

> *The main challenge was... discrepancies between what I felt was the standard of care. The main thing that comes to mind is sepsis.*
>
> — Study Participant

Psychological Stress

> *There was always that knowledge that we are in a national shortage in the background of my mind to make me kind of double think, should I be giving fluids to this person or not.*
>
> — Study Participant

Response & Solutions

Qualitative Findings

Theme 3 of 6

Communication & Alerts

EMR alerts, daily meetings with key stakeholders, and open channels of communication to coordinate response

Transparency & Teamwork

Clear expectations across teams, with transparency and collaborative teamwork

Clinical Interventions

- Centralization of IV fluids in the pharmacy
- Reallocation from areas of low urgency
- Cancellation of elective procedures
- Oral hydration protocols
- Extension of expiration dates

> *Centralization [of IV fluids] is helpful... at the expense of delays in using that supply when needed.*
>
> **— Study Participant**

Ethics & Resource Allocation

Qualitative Findings

Theme 4 of 6

Alternative Standards of Care

Inequity Between Hospital Systems

> *I worry about some hospitals having to cancel non-elective or semi-urgent admissions or procedures while other hospitals continue to practice full tilt because they have access to these resources and don't want to cancel elective cases, which are often revenue generating for the system.*
>
> — Study Participant

Smaller Hospitals

> *Some of the smaller hospitals that didn't have as many resources... tended to suffer more.*
>
> — Study Participant

Collaboration

Qualitative Findings

Theme 5 of 6

> *I think [collaborative relationships are] something that every system needs to cultivate. Because if you don't have those relationships when the times are good, it's going to be very hard to form those relationships and have them be productive and fruitful when it's a stressful situation.*
>
> — Study Participant

Cultivate Relationships Early

System-Wide Networks

Productive Under Pressure

Governance

Qualitative Findings

Theme 6 of 6

State & Federal Coordination

State and federal governments play a central role in coordinating access to limited medical supplies.

Strategic National Stockpile

The SNS serves as a critical federal reserve for emergency deployment of medical countermeasures.

Supply Chain Logistics

Regulatory frameworks and financial incentives shape supply chain structures

> *The federal level is more about what are the regulatory barriers and or incentives that make us consolidate our supply chain in such a narrow fashion.*

— Study Participant

What Hospitals Can Do

- Hazards Vulnerability Assessment
- Emergency Operations Plans
- Redundancy & Stockpiling
- Mutual Aid

Questions?

sophia.gorgens@yale.edu